



**EMC AX100 Series
Integrated Management Software**
Version 02.19.100.5.048

Release Notes

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These release notes contain supplemental information about EMC® CLARiiON® AX100SC, AX100SCi, AX100, and AX100i Integrated Management Software version 02.19.100.5.048.

This document uses the following terms:

- *Server* refers to a server or host that sends data to or receives data from the storage system.
- *Management station* refers to a server or host on the same LAN as the storage system.

You will start Navisphere® Express in a browser running on a management station. A management station can also be a server.

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Product description

The AX100SC, AX100SCi, AX100, and AX100i Integrated Management Software consists of the storage-system and server software below.

Storage-system software component	Version
FLARE [®] Operating Environment, which includes:	02.19.100.5.048
- Shared storage control	01.01.5.001
- Navisphere Express	6.19.5.1.0
- Snapshot management	2.19.002.5.007
- SAN Copy [™] /E	2.19.002.5.014
Server software component	Version
Navisphere Storage System Initialization Utility for Red Hat or SUSE Linux	6.19.1.0.0
Navisphere Storage System Initialization Utility for Novell NetWare	6.19. 1.0. 0
Navisphere Storage System Initialization Utility for Microsoft Windows	6.19. 1.0. 0
Navisphere Storage System Initialization Utility for Sun Solaris	6.19. 1.0. 0
Navisphere Server Utility for Red Hat or SUSE Linux	6.19.0.4. 14
Navisphere Server Utility for Novell NetWare	6.19.0.4. 14
Navisphere Server Utility for Microsoft Windows	6.19.4.9.0
Navisphere Server Utility for Sun Solaris	6.19.0.4. 14
VSS Provider	1.5.0.3.5
PowerPath [®] for Microsoft Windows	See the PowerPath release notes on the AX100 support website*
PowerPath for Red Hat or SUSE Linux	
PowerPath for Novell NetWare**	
PowerPath for Sun Solaris**	

* For information on accessing the AX100 support website, refer to the support information that shipped with your storage system.

** AX150SCi and AX150i storage systems do not support Novell Netware and Sun Solaris operating systems.

FLARE Operating Environment software

FLARE Operating Environment (OE) software controls the operation of the AX100SC, AX100SCi, AX100, and AX100i disk-array storage systems.

AX100SC and AX100SCi storage systems ship with a complete copy of FLARE OE software installed on the first and third disk modules (disk modules 0 and 2). These disk modules store mirrored copies of the software for the AX100SC and AX100SCi storage processor (SP).

AX100 and AX100i storage systems ship with a complete copy of FLARE OE software installed on the first four disk modules (disk modules 0 through 3). Disk modules 0 and 2 store mirrored copies of the software for SP A, and disks 1 and 3 store mirrored copies of the software for SP B.

When you power up the storage system, each SP boots and executes FLARE OE software.

Shared storage control

Shared storage control software allows only the server(s) assigned to a virtual disk to access the virtual disk.

Navisphere Express

EMC Navisphere Express is a storage-system-based management utility for configuring and managing AX100 series storage systems. This product provides the following functionality:

- ◆ Storage configuration and allocation
- ◆ Event management

Each AX100SC, AX100SCi, AX100, and AX100i storage system ships from the factory with Navisphere Express installed.

Snapshot management software

The snapshot management software is a storage-system-based software application that lets you create a point-in-time copy — a snapshot — of a virtual disk; that is, you determine when the snapshot starts. A secondary server can then access and use the snapshot for backup purposes or as a base for temporary operations on the copy of the production data without changing the source data on the virtual disk.

Before you can start a snapshot, you allocate the required snapshot disk resources. When the allocation completes, the state of the snapshot transitions to Ready, which means you can start the snapshot on the source server and then access the snapshot on the secondary server.

When you no longer require the snapshot's data, you can remove access to the snapshot. Only after you do this can you stop the snapshot. When you stop a snapshot, the point-in-time copy ends and the snapshot disk resources are freed for other snapshots to use. If you do not want to start another snapshot for this source virtual disk, you can destroy the snapshot. Destroying the snapshot frees and deallocates the snapshot disk resources that were allocated when you prepared the snapshot.

Each AX100SC, AX100SCi, AX100, and AX100i storage system ships from the factory with snapshot management software installed.

Navisphere Storage System Initialization Utility

The EMC Navisphere Storage System Initialization Utility runs on your management station or attached server. It discovers uninitialized AX100 series storage systems, lets you assign IP addresses to the SPs on the same subnet, and set up security for these storage systems.

The Navisphere Storage System Initialization Utility ships on the *AX-Series Server Support CD* that is supplied with the storage system.

Navisphere Server Utility

The EMC Navisphere Server Utility runs on each server connected to your AX100 series storage system. This utility lets you register the server with your AX100 series storage system. It also allows you to use snapshots on your servers. It lets you start, stop, access or remove a snapshot.

The Navisphere Server Utility ships on the *AX-Series Server Support CD* that is supplied with the storage system.

PowerPath software

PowerPath path management software manages the paths between a Windows, Linux, NetWare, or Solaris server and virtual disks in the storage system. It transfers I/O to a working path if one path fails and provides load balancing to distribute the I/O load equally among paths.

The PowerPath software ships on the PowerPath CDs that are supplied with the storage system. Always go to the support website for the latest version of PowerPath.

New features and changes

Previous versions introduced the following new features:

- ◆ Added support for VMware ESX Server 2.5.1
- ◆ Added support for CLARiiON VSS Provider
- ◆ Navisphere Express now supports multiple user accounts
- ◆ AX series storage systems can now be monitored or managed with Navisphere Manager
- ◆ Added support for Software Installation Wizard (Navisphere Manager required)
- ◆ Added support for Navisphere Integrator (Navisphere Manager required)
- ◆ Added support for SAN Copy/E software (Navisphere Manager required)

CLARiiON VSS Provider

The CLARiiON VSS Provider allows an application to access snapshot functionality on CLARiiON storage systems by using the VSS framework and other APIs introduced in Microsoft Windows Server 2003 APIs.

The CLARiiON VSS Provider does not have a user interface and is called only by the VSS service built into Windows Server 2003. For information on using the VSS Writer or VSS Requestor, refer to the appropriate documentation that shipped with your operating system.

Navisphere Manager

EMC Navisphere Manager is a storage-system-based management utility previously available only on EMC CLARiiON CX series storage systems. It provides advanced management features over Navisphere Express, including domain management and a secure command line interface (CLI).

Navisphere Manager is now available for use with AX series storage systems in one of two ways:

- ◆ Existing CX series storage-system customers may use Navisphere Manager to *monitor* AX series storage systems while still using Navisphere Express to *manage* the storage system (make configuration changes, and so on).
- ◆ Alternatively, you can purchase the optional Navisphere Manager upgrade for the AX series storage system. This will allow you to

manage the AX series storage system with Navisphere Manager and Navisphere CLI, but you will no longer be able to use the Navisphere Express software.

In both cases, Navisphere Manager functions are limited. For details, see the separate document, *AX100 Series – Upgrading a Storage System to Navisphere Manager*.

Software Installation Wizard (Navisphere Manager only)

The Software Installation Wizard (SIW) implements a user interface (UI) to the Navisphere Manager software upgrade function. It provides rules-based instruction for future storage-system software upgrades similar to Navisphere Express. For details, see the separate document, *EMC CLARiiON Software Installation Guide* (P/N 300-001-504).

Navisphere Integrator (Navisphere Manager only)

Navisphere Integrator allows storage systems managed with Navisphere Manager to be discovered and monitored through the leading enterprise management platforms (EMP). Integrator also enables the launch of Navisphere Manager from the EMP. Integrator supports the following EMPs:

- ◆ HP OpenView management software
- ◆ Tivoli NetView management software
- ◆ CA Unicenter TNG Framework

Navisphere Integrator is installed and executed on a Windows 2000 server that also hosts the EMP. For more information on Navisphere Integrator, refer to the *EMC Navisphere Integrator Administrator's Guide* (P/N 069001144), which ships on the *EMC CLARiiON Storage-System Hardware and Software Documentation CD*.

SAN Copy/E

EMC SAN Copy/E is an optional storage-system-based software package available separately for copying data directly from a virtual disk on one storage system to destination logical units on supported remote systems without using host resources. You can use SAN Copy/E to create full or incremental copies of a source logical unit. A full copy session copies all the data on the source logical unit to the destination logical units. An incremental session copies only the data that has changed since the last copy session. This can significantly reduce the time needed to copy the data, thereby allowing the copy operation to be performed more frequently and more effectively. Unlike full copy

sessions, the source logical unit for an incremental session can remain online during the copy process.

SAN Copy/E is subject to the following configuration limits:

- ◆ Data can be copied only to CX series storage systems that are also running EMC SAN Copy.
- ◆ A maximum of 100 copy sessions can be configured.
- ◆ A maximum of two copy sessions can be active simultaneously.
- ◆ The storage system must be managed with Navisphere Manager, not Navisphere Express.

For further information, see the separate document, *EMC SAN Copy/E for Navisphere Administrator's Guide* (P/N 300-002-664).

Environment and system requirements

This section identifies the minimum environment and system requirements necessary for the AX100SC, AX100SCi, AX100, and AX100i Integrated Management Software components.

FLARE requirements

Storage-system type	Minimum hardware requirements
AX100SC or AX100SCi	<ul style="list-style-type: none"> • 1 SP • 1 power supply • 1 non-volatile cache card for write caching
AX100 or AX100i	<ul style="list-style-type: none"> • 2 SPs • 2 power supplies • 1 uninterruptible power supply (UPS) for write caching

Navisphere Express requirements

The minimum server requirements for Navisphere Express are:

- ♦ A management station with a minimum of one 500 MHz CPU, with 256 MB of RAM. EMC recommends using a 1 GHz CPU, with 512 MB of RAM.
- ♦ Internet Explorer 5.5 or greater, Netscape 7.0 or greater, or Mozilla 1.0.1 or greater.
- ♦ A TCP/IP network connection from the management station to each storage processor (SP) in the storage system.
- ♦ Minimum screen resolution of 1024 x 768 and 256 colors with small fonts.

Viewing Navisphere Express through a browser is supported on management stations running any of the following systems:

- ♦ Windows XP server
- ♦ Windows 2000 server
- ♦ Windows Server 2003 server
- ♦ Red Hat Linux server
- ♦ SUSE Linux server
- ♦ NetWare client
- ♦ Solaris client

For a listing of the currently supported versions of these operating systems, refer to **Supported Configurations** in the “Technical descriptions” section of the AX100 support website.

Navisphere Storage System Initialization and Server Utility requirements

The Navisphere Storage System Initialization Utility and the Navisphere Server Utility are supported on servers running any of the following operating systems:

- ◆ Windows 2000
- ◆ Windows Server 2003
- ◆ Red Hat Linux
- ◆ SUSE Linux
- ◆ NetWare
- ◆ Solaris

For a listing of the currently supported versions of these operating systems, refer to **Supported Configurations** in the “Technical descriptions” section of the AX100 support website.

The Storage System Initialization Utility runs on a server that is on the same subnet as the storage system you want to initialize.

PowerPath requirements

For PowerPath requirements, refer to the PowerPath release notes on the AX100 support website.

Fixed problems

This section identifies issues fixed in various versions.

Visit the EMC Powerlink® Issue Tracker website at <http://Powerlink.EMC.com> for the most recent updates and information on previous AX100 Integrated Management Software versions.

Hardware problems fixed in version 02.19.100.5.048

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – An upgrade from a version prior to 02.19.100.5.035 may fail if the database disk modules are powered down due to the Maxtor drive fallout issue. (183972)	<u>Fixed in version:</u> 02.19.100.5.048 <u>Solution:</u> As long as one of the database disk modules remains operational, the upgrade will now succeed. This enables the storage system to be upgraded to a version with the Smart data overflow fix.

Hardware problems fixed in version 02.19.100.5.046

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Added new drive types to support new versions of 250 and 500 GB drives.. (170760)	<u>Fixed in version:</u> 02.19.100.5.046 <u>Solution:</u> Added support for drives.

Hardware problems fixed in version 02.19.100.5.043

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Read cache is not enabled when the storage system enables the system write cache (135473).	<u>Fixed in version:</u> 02.19.100.5. 043 <u>Solution:</u> Storage system now consistently enables the read cache when it enables system cache.
AX100SC, AX100SCi, AX100, AX100i – In very infrequent cases heavy I/O to the same LBA causes the front-end ports to hang (154617).	<u>Fixed in version:</u> 02.19.100.5. 043 <u>Solution:</u> Prevents overlapped I/O from reaching FLARE, which prevents the front-end ports from hanging.
AX100, AX100i – System fault LED does not light when the UPS serial cable is disconnected (156802).	<u>Fixed in version:</u> 02.19.100.5. 043 <u>Solution:</u> Fixed the system fault LED so that it will light when the UPS serial cable is not connected.
AX100SC, AX100SCi – System fault LED does not light when the wrong cache card (from another storage system) is installed in a storage system (156803).	<u>Fixed in version:</u> 02.19.100.5. 043 <u>Solution:</u> Fixed the system fault LED to light when the wrong cache card is installed.
AX100SC, AX100SCi, AX100, AX100i – Sniff verify is disabled (163178).	<u>Fixed in version:</u> 02.19.100.5. 043 <u>Solution:</u> Sniff verify is now enabled.

Problem	Details
AX100SCi, AX100i – iSCSI cluster and congestion issues caused performance problems (159238 and 159278).	<u>Fixed in version:</u> 02.19.100.5.043 <u>Solution:</u> Fixed iSCSI cluster and congestion issues.

Hardware problems fixed in version 02.19.100.5.041

Problem	Details
AX100SC, AX100SCi – Heavy host I/O to the storage system causes a cache resource problem, which causes the storage system to panic. (142940).	<u>Fixed in version:</u> 02.19.100.5.041 <u>Solution:</u> Optimized cache resource allocation to accommodate heavy I/O and prevent an SP panic.
AX100SC, AX100SCi, AX100, AX100i – When Solaris clustered hosts attempt to trespass a double-faulted LUN, the storage system returns an event (reservation conflict) to the cluster that causes the storage system to panic (139699).	<u>Fixed in version:</u> 02.19.100.5.041 <u>Solution:</u> FLARE now returns the proper error to the host when the condition described occurs.
AX100SC, AX100SCi – Enclosure LED does not light when the cache card batteries fail to charge. (150862)	<u>Fixed in version:</u> 02.19.100.5.041 <u>Solution:</u> The enclosure LED now lights when the cache card batteries fail to charge.

Hardware problems fixed in version 02.19.100.5.035

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Maxtor drive fallout issues. (144052, 146971, 147219, 147908, 148260, 144992, 145764, 147219).	<u>Fixed in version:</u> 02.19.100.5.035 <u>Solution:</u> Periodically save Smart data to prevent buffer overflows that prevent drives from going online.

Hardware problems fixed in version 02.19.100.5.028

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Sniff verify, which helps protect against long-term degradation of the disk media, does not resume after the hot spare swap-out. (141235).	<u>Fixed in version:</u> 02.19.100.5.028 <u>Solution:</u> Cause sniff verify to restart on a swap-finished operation.
AX100SC, AX100SCi, AX100, AX100i – Sniff verify does not work in version 02.19 (140025).	<u>Fixed in version:</u> 02.19.100.5.028 <u>Solution:</u> Sniff verify is enabled with this fix.

Hardware problems fixed in version 02.19.100.5.018

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – If an SP is in degraded mode and is subsequently reimaged, it will enter an endless panic loop. (129619)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> A flag was added to NVRAM that is set when the reboot count is set to zero. This is used as an indication that the count was set to zero on the prior boot and will prevent the count from being set to zero again. This flag will be cleared in NDUMON when the SP is declared to be healthy.
AX100SC, AX100SCi, AX100, AX100i – AIX uses the fibre open initiator type and fibre open rejects mode sense page 0x3F and mode select page 0xA on the passive path, which results in AIX performing many more reopens than desired during NDU. (130313)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Change made to allow these mode pages to be accepted on the passive path.
AX100SC, AX100SCi, AX100, AX100i – R5 units that are degraded will not log crc or media errors for read I/Os that do not hit the degraded drive position. This leads to missing occurrences of uncorrectable events. (130363)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Change code to log these errors.
AX100SC, AX100SCi, AX100, AX100i – If the PSM LUN takes a checksum error while a single drive is degraded, then the storage system does not recover by using the third drive of the 3-way mirror.(130357)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Modified RAID drive to use the third mirror in this condition.
AX100SC, AX100SCi, AX100, AX100i – There are cases where a checksum error that is detected as part of a backfill pre-read on an MR3 will not be fixed. This can lead to "unexpected" checksum errors and sector reconstructed errors. (130360)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Transition to recovery verify when a checksum error is detected in backfill data.
AX100SC, AX100SCi, AX100, AX100i – Invalid event log messages are displayed due to memory corruption. The messages in question were Rebuild complete and Rebuild Aborted. (130418)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Buffer size increased to 48 bytes.
AX100SC, AX100SCi, AX100, AX100i – A hot spare faulted while it was swapped in for a failed drive. A dual-SP panic occurred as a result of unbinding the hot spare while it was faulted. (130440)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Clear the NEEDS_DB_REBUILD flag in the FRU table when the last LUN is unbound from the RAID group. This is not done in the current code base and it leads to an unnecessary database rebuild on an unbound FRU.
AX100SC, AX100SCi, AX100, AX100i – Rebuild not started from 0 percent after drive swapped. (130681)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Detect an invalid base FRU signature to mark the LUN as needing rebuild during an assign.

Problem	Details
AX100SC, AX100SCi, AX100, AX100i - CMI does not specify "physically contiguous" when allocating memory, which causes DMA problems in iSCSI storage systems, and a storage-system panic can result within moments of being booted. (130897)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> CMIPCI driver now allocates memory from the correct memory pool.
AX100SC, AX100SCi, AX100, AX100i – Drive media errors can lead to PSM timeout panic. (129472)	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Modified the media error retry count and PSM timeout. Also eliminated the retry of the remapping of the same block multiple times.
AX100SC, AX100SCi, AX100, AX100i – Addition of drive support for Short Stroke 250GB Hitachi Kirufune II.	<u>Fixed in version:</u> 02.19.100.5.018 <u>Solution:</u> Added support for drive.

Hardware problems fixed in version 02.19.100.5.014

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Incorrect part number displayed for 500 GB drive.	<u>Fixed in version:</u> 02.19.100.5.014 <u>Solution:</u> Corrected text string for 500 GB drive part number.

Hardware problems fixed in version 02.19.100.5.005

Problem	Details
AX100SC, AX100SCi, AX100, AX100i - Replacing a drive that is being equalized while the disk pool is shut down may lead to incorrect data on the rebuilt disk. This can lead to a CM_ILLEGAL_FRU_STATE (0x00800064) panic. (121839)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Reset equalize checkpoint when a new disk is inserted in the slot being equalized, and rebuild the FRU database when swapping out a disk.
AX100SC, AX100SCi, AX100, AX100i – In rare circumstances, incorrect data is written to an expanded virtual disk if media errors are recorded on one of the drives in the disk pool. (123356)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> A problem was uncovered in and fixed in the error handling code.
AX100SC, AX100SCi, AX100, AX100i – In cases where there are multiple uncorrectable errors, data verification may result in repeated panics or invalidation of otherwise recoverable data. (123526)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> This requires multiple errors to occur, leading to inconsistent metadata. Changes have been made to have the metadata updated such that reconstruction of data can occur.
AX100SC, AX100SCi, AX100, AX100i – A storage system experienced a dual-SP panic while rebuilding a RAID 1/0 mirror to a hot spare. This may cause a data unavailable situation. (123867)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> A change was made to hold off the equalize until all virtual disks have finished rebuilding.
AX100SC, AX100SCi, AX100, AX100i – If virtual disks within a disk pool are trespassed while an equalize is in process, the replacement disk may contain incorrectly rebuilt data. (123878)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Changes were made to the RAID driver to use the most accurate equalize checkpoint information.

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Under certain circumstances, multiple drive failures within a disk pool can cause unowned virtual disks during a bind operation while a drive in the disk pool is in the process of being rebuilt to a hot spare. This may cause a data unavailable situation. (124079)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> The bind operation was modified to include a check to make sure that it does not mark a virtual disk on a device as needing a rebuild if another device in the disk pool is already marked. This change will prevent the double fault situation.
AX100SC, AX100SCi, AX100, AX100i – Disk drives that were included in an attempt to create a disk pool are unavailable for use in additional attempts if a disk fails during the create operation. This situation could prevent you from creating a disk pool until after the SP is rebooted. (122405)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> The peer SP prevents the use of the disks for subsequent disk pool creation attempts because it thinks that the disk pool exists. The software was changed so that the peer SP would not recognize the disk pool as created if the operation failed. Prior to this version, the workaround for this problem required rebooting the SP (peer SP) that thinks the disk pool exists.
AX100SC, AX100SCi, AX100, AX100i – Under certain situations, the write cache cannot be enabled after an upgrade. This may also cause the SP to panic. (124595)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> A sanity check failed to catch the fact that there were virtual disks with dirty cache pages and permitted changes to an internal data structure containing a list of cache dirty virtual disks. This situation left the list in an indeterminate state, which ultimately led to the problem. The sanity check was modified to properly check for cache dirty virtual disks prior to upgrade to allow the system to take the appropriate action.
AX100SC, AX100SCi, AX100, AX100i – If a faulty HBA attempts to log in to an SP using an illegal (all zeros) WWN, both SPs will panic simultaneously. This may result in a data unavailable situation. (124275)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> The invalid WWN happens to be one that the SCSI target driver uses internally. The target driver believes that the host is already logged in and subsequently panics the SP to clear the situation. The software has been modified to reject the login of invalid WWNs without a panic and return an appropriate error message with the reason for the rejection.
AX100SCi, AX100i – The SCSI Mode Sense test component of the Microsoft Hardware Compatibility Test suite for certification fails intermittently. (126406)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> A buffer containing the information representing the mode page was not being updated with new data. Subsequently, there were times during the test where the data was appropriate and the test passed and other times when it was not refreshed and the test failed. The SCSI HCT test passes now that the buffer data is always updated.
AX100SCi, AX100i – When the iSCSI Internet Storage Naming Service (iSNS) is active, an upgrade may fail due to excessive processor use. (123009)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Instantiating a particular object repeatedly causes the system to produce inaccurate processor use statistics. The iSNS executable has been fixed to not instantiate this object repeatedly.

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – CLARiiON storage systems connected to Cisco switches may report hosts as <code>logged in</code> even when those hosts have been disconnected or removed from the zone. When the hosts are properly connected to the network/storage system, all I/O requests are handled normally. (118562, 116887)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Cisco switches can generate host source IDs that are nonstandard. These nonstandard values resulted in the hosts being incorrectly classified as being on a local loop and therefore excluded from zone checking. This then resulted in the hosts not being properly logged out after removal from the zone. Fixed the code to verify that the local link is running as a loop before excluding from zone checking.
AX100SC, AX100SCi, AX100, AX100i – Storage system may not log out initiators properly if all initiators are removed from the zone. (118871, 118872)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> When the storage-system port is the only port in the zone, the code failed to reset the count of initiators in the zone to 0, using the previous zoning information to log out initiators. Corrected the code to properly set the count to 0 in this case so initiators are logged out properly.
AX100SC, AX100SCi, AX100, AX100i – Persistent Reservation type not handled properly (according to ANSI spec) can cause Sun host systems to crash. (117505, 117577)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Fixed Persistent Reservation check for non-I/O commands for various reservation types to return the correct status.
AX100SC, AX100SCi, AX100, AX100i – SP panic (0x00800007) during software upgrade (120991)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> There was a very small window of opportunity for an SP to panic during an upgrade if a disk is found dead, is removed, or if a FRU signature error occurs. The code did not wait for the rebuild, which resulted in the virtual disks becoming "broken" and causing the panic. Fixed the code to handle the rebuild properly in compatibility mode during upgrade.
AX100SC, AX100SCi, AX100, AX100i – One or more virtual disks and disk pools disappear after an SP reboots. (119661, 119105, 117351, 117665, 118887, 121446)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> This happened only after a disk pool create failed. One or more virtual disks and disk pools on the same disks could disappear after an SP rebooted. Fixed the code to clean up properly after the failed disk pool creation to avoid the problem.
AX100SC, AX100SCi, AX100, AX100i – Equalize completed on a hot spare but a storage-system reboot or panic during swap-out can lead to a stuck swapped-in hot spare. (114643)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Swap events are now prevented from occurring while a powerup event is in progress. Also, additional logic has been added to handle a hot spare that is left swapped in after an equalize operation.
AX100SC, AX100SCi, AX100, AX100i – The in-memory copy of the FRU-signature cache can be corrupted resulting in a panic triggered by the corrupted data. (119352)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Whenever a FRU signature is read, all the partitions are checked for valid virtual disk and disk pool values. Any corrupt partition data is invalidated. Other checks have been added to protect FRU signature data integrity.

Fixed problems

Problem	Details
AX100SC, AX100SCi, AX100, AX100i – Internal FLARE GLD configuration file can be deleted because of errors parsing XML file. (119609)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> A check has been added to ensure that GLD configuration file read operations are successful so future configuration changes do not result in a loss of valid information.
AX100SC, AX100SCi, AX100, AX100i – During the Navisphere poll cycle, the timing of an initiator logout can result in <code>ERROR_DEV_NOT_EXIST</code> being returned from an IOCTL that gets logged to the event logs. This is not an error condition. (120086)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> This timing scenario has been accounted for and will return valid status if this window is encountered.
AX100SC, AX100SCi, AX100, AX100i – Drive removal occurring just as a virtual disk assignment is taken off the disk pool busy queue causes the panic 0x008000e2. (125125)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> The assign will now fail and be retried.
AX100SC, AX100SCi, AX100, AX100i – Rapid unbinding and rebinding of virtual disks that unbind a disk before the bind is completed may cause an incorrect panic. (126422)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> The panic was removed and replaced with a debug tracing.
AX100SC, AX100SCi, AX100, AX100i – After a reboot a hot spare can swap out prematurely during boot, which can lead to a data loss scenario. (127452)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Tighter restrictions have been applied to the swap-out logic for hot spares.
AX100SC, AX100SCi, AX100, AX100i – Single-SP panic (<code>RG_BAD_DD_STATUS</code>). (119675)	<u>Fixed in version:</u> 02.19.100.5.005 <u>Solution:</u> Corrected abort handling logic.

Snapshot problems fixed in version 02.19.002.5.007

Problem	Details
Snapshot stops all sessions for a virtual disk whose logical block capacity is not a multiple of 64 Kbits and I/O is issued to the last block of the virtual disk. [122570]	<u>Frequency of occurrence:</u> Frequent if the virtual disk is a Windows Dynamic Drive. <u>Effect:</u> The sessions on the virtual disk will stop and must be restarted. <u>Prevention/resolution:</u> Fixed in 02.19.002.5.007.
Snapshot may bugcheck when destroying a snapshot device. (116252)	<u>Frequency of occurrence:</u> Very Infrequent. <u>Effect:</u> The SP will bugcheck and reboot. <u>Prevention/resolution:</u> Fixed in 02.19.002.5.007.
Snapshot may bugcheck during incremental SAN Copy mark operations. (115728)	<u>Frequency of occurrence:</u> Very Infrequent. <u>Effect:</u> The SP will bugcheck and reboot. <u>Prevention/resolution:</u> Fixed in 02.19.002.5.007.

SAN Copy/E problems fixed in version 02.19.002.5.018

Problem Description	Details
A copy session that was stopped may continue to display an active status. [127953]	<p><u>Frequency of occurrence:</u> Very Infrequent</p> <p><u>Symptom:</u> A copy session may continue to display an active status even after the session is stopped. The session will stop and not progress further; however, an incorrect status may be displayed.</p> <p><u>Solution:</u> The new software correctly handles the displaying of the stopped status.</p>
Starting incremental SAN Copy/E sessions during an NDU commit to FLARE OE Version 02.19.yyy and higher may cause the SP to panic. [129900]	<p><u>Frequency of occurrence:</u> Infrequent</p> <p><u>Symptom:</u> The SP may panic if an incremental SAN Copy/E session is started while attempting to commit FLARE OE Version 02.19.yyy or higher.</p> <p><u>Solution:</u> The new software handles starting of incremental SAN Copy/E sessions while committing FLARE OE version 02.19.yyy or higher.</p>

SAN Copy/E problems fixed in version 02.19.002.5.014

Problem	Details
Having SAN Copy/E enabled on the storage system can cause the storage processor (SP) to become unmanaged [130364]	<p><u>Frequency of occurrence:</u> Very Frequent</p> <p><u>Effect:</u> Having SAN Copy enabled on the storage system causes a memory leak, which can cause the Navisphere Host Agent to exceed its memory threshold. If the agent exceeds this threshold it will stop causing the SP to become unmanaged.</p> <p><u>Prevention/resolution:</u> Fixed in 02.19.002.5.014</p>

Navisphere Express problems fixed in version 02.19.100.5.042

Problem	Details
Access violations within Navisphere Express will cause the storage processor to panic. <u>Frequency:</u> Rarely under a rare set of circumstances. [160065]	Navisphere Express experienced an access violation while holding a PSM file open. This caused a timer to expire and panic the SP. Navisphere Express now avoids the access violation and also opens PSM files differently so that it will not get stuck while having a PSM file open.
Navisphere Express will continue showing an alert for snapshot resources being greater than 50 percent consumed even after the snapshots have been removed. <u>Frequency:</u> Always under a specific set of circumstances. [140485, 161193]	Navisphere Express will now reset the alert once the snapshot is removed. It will also include an option to dismiss the alert.

Problem	Details
<p>Navisphere Express was hitting an access violation inside of the main processing thread. It was then continuing through the main process loop with out waiting for the next iteration. This was causing Navisphere Express to take up most of the CPU cycles on the storage processor.</p> <p><u>Frequency</u>: Rarely under an rare set of circumstances.</p> <p>[162392]</p>	<p>Navisphere Express now handles the access violation better and will wait for the timer to expire before continuing through the next iteration of the main process loop.</p>

Navisphere Express problems fixed in version 02.19.100.5.041

Problem	Details
<p>When a language pack is installed on the storage system, creating a virtual disk does not work as intended. The storage system uses all remaining space in the disk pool and creates one LUN.</p> <p><u>Frequency</u>: Always under a specific set of circumstances.</p> <p>[155446]</p>	<p>Navisphere Express was comparing the localized unit string specified by the user against the specific English string options of "GB" and "MB" to determine what the user had selected. In most cases a match was not made which caused Navisphere Express to default to binding all of the available space. The localized selection by the user is now compared against the localized versions of "GB" and "MB".</p>
<p>SNMP traps sent by Navisphere Express may contain the wrong IP address in the trap details.</p> <p><u>Frequency</u>: Frequently under a specific set of circumstances.</p> <p>[142405]</p>	<p>Navisphere Express was using an older version of a third-party DLL that did not allow this information to be set. The third-party DLL has now been upgraded and this allows Navisphere Express to correctly set the IP address within the trap before sending it.</p>
<p>SNMP traps contain the wrong value for system uptime.</p> <p><u>Frequency</u>: Always under a specific set of circumstances.</p> <p>[145601]</p>	<p>Navisphere Express was using an older version of a third-party DLL that did not calculate this value correctly. The third-party DLL has now been upgraded and this value is correctly displayed in the SNMP traps.</p>

Navisphere Express problems fixed in version 02.19.100.5.035

Problem	Details
<p>An invalid check occurs on the Virtual Disk page that causes the page to display an <code>unknown error has occurred while displaying this page.</code></p> <p><u>Frequency:</u> Infrequently under a specific set of circumstances [138004, 144979]</p>	<p>Navisphere Express now verifies that the data returned from the server is valid before attempting to perform operations on it.</p>
<p>In the process of trying to log access violations, Navisphere Express was causing a memory spike on the SP. The spike would last for a few seconds during which time operations would fail.</p> <p><u>Frequency:</u> Infrequently under a specific set of circumstances. [139777]</p>	<p>Modified system API call to not load symbols when trying to output the call stack.</p>
<p>Access violations within Navisphere Express may cause Navisphere Express, or the SP itself, to start exhibiting adverse behavior. This behavior will persist until the SP is rebooted.</p> <p><u>Frequency:</u> Infrequently under a specific set of circumstances. [137797, 138732, 139826, 140641, 141421, 141945, 142369]</p>	<p>The access violations have been fixed.</p>
<p>Memory leaks may cause Navisphere Express to hit its memory threshold and restart.</p> <p><u>Frequency:</u> Always under a specific set of circumstances. [140196, 141412]</p>	<p>The memory leaks have been fixed.</p>
<p>A thread deadlock within Navisphere Express is being caused by a thread not releasing a lock during an error situation. This will cause Navisphere Express to hang. The only remedy is to reboot the SP.</p> <p><u>Frequency:</u> Rarely under a rare set of circumstances. [141362]</p>	<p>Locking is now done through objects that release locks based on scope and that do not require all code paths to correctly release the lock.</p>

Navisphere Express problems fixed in version 02.19.100.5.018

Problem	Details
The Dismiss button for the Attention Required message: A Hot Spare is currently not allocated on the storage system. Creation of a Hot Spare is highly recommended. does not work correctly. Selecting the Dismiss button will not remove the display of this message. [127711]	Navisphere Express will now accept the Dismiss button and remove the display of the Attention Required for Hot Spare message.
A memory leak within Navisphere Express may cause an SP to be unmanaged or for operations to start failing. Navisphere Express should return to normal operation within a few minutes. [129228]	Fixed the memory leak.
Sometimes Navisphere Express will hit its connection limit and not allow any additional connections. [130535]	Connections are now shut down correctly when a user exits the browser running Navisphere Express. This stops the application from hitting its connection limit.

Navisphere Express problems fixed in version 02.19.100.5.014

Problem	Details
Incorrect use of a system API within Navisphere Express may cause an SP to be unmanaged or operations to start failing. If the situation does not recover in a few minutes, the only solution is to reboot the SP. [129924]	Call the correct system API to avoid getting stuck during shutdown.
The string "0x" is being added to the beginning of all event codes sent through event monitor's email notification service. [131913]	Fixed event monitor to no longer add "0x" to the event codes.

Navisphere Express problems fixed in version 02.19.100.5.007

Problem	Details
<p>Navisphere Express does not clear the event log. Navisphere Express does not support the ability to clear the event log. The following event code will be displayed:</p> <pre>Event Code 2046 The Windows logname log has wrapped. Events in this log will not be processed. I/O from connected servers to the storage system will not be interrupted. [116021]</pre>	<p>Added support to clear the event log</p>

Navisphere Server Utility problems fixed in version 6.19.4.9.0

Problem	Details
<p>The Japanese version of the Windows Server Utility will fail for any snapshot operation.</p> <p><u>Frequency:</u> Always under a specific set of circumstances.</p> <p>[154651]</p>	<p>The default naming scheme allowed a localized string so comparison was not being done correctly. Navisphere Express no longer allows the default names to be localized so that all string comparisons now correctly find a match and the snapshot operations now succeed.</p>

Known problems and limitations

This section identifies outstanding issues with this version, and important warnings associated with the connectivity and compatibility of this product. It also provides useful recommendations.

Visit the EMC Powerlink Issue Tracker website at <http://Powerlink.EMC.com> for the most recent updates and information on previous AX100 Integrated Management Software versions.

Known problems frequency

The frequencies for the known problems listed in this section have the following meanings:

<u>Frequency</u>	<u>Definition</u>
Every Time	Occurs whenever the specific condition is met.
Very Frequent	Occurs between 30 and 50 percent of the time when the specific cause is repeated.
Frequent	Occurs between 10 and 30 percent of the time when the specific cause is repeated.
Intermittent	Occurs between 1 and 10 percent of the time when the specific cause is repeated.
Very Intermittent	Occurs less than 1 percent of the time when the specific cause is repeated.
Extremely Intermittent	Failure mechanism may never be seen except under the most stressful QA test environments.

Hardware problems

<u>Description</u>	<u>Details</u>
AX100 and AX100i - Sniff verify does not work on a hot spare disk.	<u>Frequency</u> : Every time. <u>Prevention/resolution</u> : There is no workaround for this problem; you should replace the faulted disk as soon as possible.
AX100 and AX100i – If disk module 3 is not a component of a virtual disk, removing disk module 3 does not cause the storage-system fault light to be lit. Disk module 3 is one of the minimally specified set of disk modules for the AX100. Removing it removes a redundant copy of the FLARE Operating Environment (OE) software for SP B.	<u>Frequency</u> : Every time disk module 3 is removed if no virtual disks have a component on disk module 3. <u>Prevention/resolution</u> : To prevent the issue, do not remove disk module 3. To resolve the issue, reinsert disk module 3.

Description	Details
<p>AX100 and AX100i – After reboot, although you can ping one or both SPs, neither SP is accessible for I/O. The SP boot/fault light on the SP is blinking. This may also be seen during a reboot due to a software upgrade of the FLARE OE.</p>	<p><u>Frequency</u>: Very Intermittent <u>Prevention/resolution</u>: Shut down and restart the storage system. If this does not work, then see the AX100 hardware troubleshooting trees for the SP boot/ fault light on the AX100 support website.</p>
<p>AX100, AX100i, AX100SC, AX100SCi – During an upgrade operation a message similar to the following appears in the event log:</p> <pre>Checking file system on C: The type of the file system is NTFS. Volume label is FLARE Partition. A disk check has been scheduled. Windows will now check the disk. Cleaning up minor inconsistencies on the drive. ... Windows has finished checking your disk. Please wait while your computer restarts. This is due to an intentionally scheduled run of a utility to verify that all files were transferred and installed on the storage system correctly. (83371)</pre>	<p><u>Frequency</u>: Every Time <u>Prevention/resolution</u>: The message is expected and should be ignored.</p>
<p>AX100i, AX100SCi – If the host iSCSI name is being changed from the default, the new name must be a minimum of 16 valid characters in length. If the iSCSI name is shorter than 16 characters, the host will not configure its virtual disks at powerup. (118537).</p>	<p><u>Frequency</u>: Every time <u>Prevention /resolution</u>: Create an iSCSI name with a minimum of 16 valid characters.</p>
<p>AX100 and AX100i – Under certain conditions following a virtual disk expansion, the capacity reported for the virtual disk will remain the original capacity even though the expansion was performed. This can occur only when the user does not specify a capacity when starting the expansion. If the user specifies a capacity value (does not take the default) when starting the stripe expansion, then the new capacity is reported correctly. (128513)</p>	<p><u>Frequency</u>: This requires Navisphere Manager to be used. This condition will occur Every Time under the following conditions: the user 1) does a no-grow expansion, 2) changes the capacity of the meta-virtual disk, 3) does an expansion. In this case the expansion in 3) always leaves the capacity at the prior value.</p> <p>This condition occurs Very Intermittently in the case where no-grow is not involved and only in cases where the user is performing multiple meta-virtual disk expansions at the same time.</p> <p><u>Prevention/resolution</u>: To prevent the condition, specify a capacity when initiating the meta-virtual disk expansion. If the failure has already occurred, use Navisphere to manually change the capacity of the meta-virtual disk to the correct capacity.</p>

Software problems

This section lists known software problems.

Navisphere Storage System Initialization Utility problems

Description	Details
<p>Storage-system discovery – The NetWare version of the storage system initialization utility will not discover uninitialized storage systems unless the management station has been configured to receive global broadcasts.</p>	<p><u>Frequency:</u> Every Time</p> <p><u>Prevention/resolution:</u> From a console window on your management station, perform the following steps:</p> <ol style="list-style-type: none"> 1. Type set allow non local broadcasts . 2. Record the current setting. If it is equal to 1, you already have reception of broadcasts from other subnets enabled and do not need to make any changes. 3. If the value from step 2 is any value other than 1, type set allow non local broadcasts = 1 4. Run the storage system initialization utility from a server that has only one active network card or use the Windows version of this utility. 5. If you do not want to leave your management station configured to receive global broadcasts, type set allow non local broadcasts = value_from_step_3
<p>Storage-system discovery – The NetWare version of the storage system initialization utility will not discover uninitialized storage systems if the management station has more than one active network card.</p>	<p><u>Frequency:</u> Every Time</p> <p><u>Prevention/resolution:</u> Run the utility from a server that has only one active network card.</p>

Navisphere Express problems

Description	Details
<p>Change in fan display for single controller storage systems – Fan 3 had previously been displayed as empty in the Navisphere Express components list. Beginning with rversion 02.16, the fan will not appear at all in the components list.</p>	<p><u>Frequency:</u> Every Time</p> <p><u>Prevention/resolution:</u> This behavior is normal. Single controller storage systems do not have a fan 3.</p>
<p>Multiple browser windows –Managing your storage system through multiple browsers on the same or different servers can result in inconsistent views of the storage system.</p>	<p><u>Frequency:</u> Intermittent</p> <p><u>Prevention/resolution:</u> Do not manage your storage system through multiple browser windows at the same time.</p>

Description	Details
Drive letter mappings – Navisphere Express does not correctly display drive letter mappings for all virtual disks when you assign a large number of virtual disks to a single server.	Frequency: Every Time (if you assign too many virtual disks to the server) Prevention/resolution: Either do not assign more than 30 virtual disks to the same server or assign all the virtual disks you want to the server, and accept the fact that there will be incorrect mapping of drive letters.
Write cache disabled – You may see this warning message after you upgrade software.	Frequency: Intermittent Prevention/resolution: It can take five minutes for the write cache to become available after upgrading your software, at which time the warning message should disappear.
Downloading diagnostic files – Downloading diagnostic files does not work correctly when Navisphere Express is launched from an Internet Explorer Revision 5.5 browser.	Frequency: Every Time Prevention/resolution: Upgrade your Internet Explorer browser software to a version higher than 5.5.
Software upgrade using Mozilla or Firefox web browsers – An error message may be displayed indicating that your security certificate contains the same serial number as another certificate. (124170)	Frequency: Intermittent Prevention/resolution: Use browser options to delete the certificate associated with the storage system and restart the software upgrade.
SAN Copy - Clicking an item in the Assigned To list in the Manage SAN Copy dialog box causes you to be redirected to the Login screen. This occurs when the link name contains the # character.	Frequency: Every Time (if the # character exists in the name) Prevention/resolution: Do not use the # character when naming storage systems that will be used in SAN Copy configurations.

Snapshot problems

Description	Details
Preparing multiple snapshots simultaneously can result in an erroneous error message indicating that you are out of disk space.	Frequency: Intermittent Prevention/resolution: Wait until one snapshot has transitioned to the Ready state before preparing the next snapshot.
Providing access to a snapshot on the secondary server can take up to 30 seconds. This issue has been seen only on Windows Server 2003 servers running PowerPath MPIO attached to an iSCSI AX series storage system. (124230)	Frequency: Every Time Prevention/resolution: None.
Snapshot operations performed by the server utility will fail if the virtual disk name contains non-English characters.	Frequency: Every time Prevention/resolution: Use English characters when naming virtual disks if you will be using the snapshot feature.
Unable to start a snapshot from the server utility.	Frequency: Infrequent Prevention/resolution: Run the server utility from its installation folder/directory.

Description	Details
When you try to create a snapshot, the following error is displayed: Unable to create snapshot resources. Please create an additional disk pool and try again.	<p><u>Frequency:</u> Infrequent</p> <p><u>Prevention/resolution:</u> Wait one minute and try to create the snapshot again.</p>

Admsnap problems

Description	Details
Admsnap – Linux Admsnap on a Red Hat Linux system cannot access more than seven devices on the secondary (backup) server.	<p><u>Frequency:</u> Frequently</p> <p><u>Prevention/resolution:</u> By default the Linux kernel creates only eight sg devices. (The internal disk uses one of the sg devices.) If you want the server to access more than seven devices, you must create additional sg devices and link them to the sd devices.</p>

PowerPath problems

PowerPath problems are described in the PowerPath release notes on the AX100 support website.

Limitations

This section lists issues that may affect the configuration or repair of the storage system.

Snapshot configuration limitations

Snapshots	Maximum number
Per storage system	4
Per source virtual disk	1

PowerPath limitations

Any PowerPath limitations are described in the PowerPath release notes on the AX100 support website.

Technical notes

This section contains information that will help with the installation, use, and management of the storage system. It provides generic information that applies to all platforms as well as platform-specific information.

AX100SC, AX100SCi, AX100, and AX100i notes

SP startup

For a dual-SP storage system (AX100 or AX100i), EMC recommends that you reboot an SP only during periods of low I/O activity. For a single-SP storage system (AX100SC or AX100SCi), stop all I/O to the storage system.

Returning a storage system to an uninitialized state

Use the following procedure to ensure that your storage system is correctly reset to an uninitialized state:

1. Power down the storage system.
2. Wait one minute after the storage system is fully powered down.
3. Press and hold the power button until the green LED has been on for one second.

Once the storage system is in an uninitialized state, you can use the storage system initialization utility to change the IP address for each SP, the username, and the password.

Event log entries appear out of order

FLARE OE software may not always enter items into the event log in the order in which they occurred. This happens only when several events occur at approximately the same time. The time stamps are correct.

Hot spare ownership

Once a hot spare is assigned to a degraded virtual disk, that virtual disk owns it until either the virtual disk is repaired and the equalize operation completes or the virtual disk is destroyed. If the virtual disk is accidentally double-faulted because you removed the wrong disk module during repair, then re-inserting the incorrectly removed disk module should cause the virtual disk to return to its original state (including continued operation with the hot spare engaged).

Disk module insertion and removal

When inserting or removing more than one disk module from a storage system, you must pause between each removal or insertion to allow the storage system to recover. Before inserting or removing the next disk module you should make sure that:

- ◆ A newly inserted disk module's amber light is off and its blue light has returned to a normal state: on or blinking due to I/O in progress.
- ◆ On a disk module removal, the blue lights for the other disk modules return to a normal state: on or blinking due to I/O in progress.
- ◆ The storage system appears to have resumed normal operation.

Database disk module replacement

You should replace disk module 0, 1 or 2 only when the storage system is fully operational. The disk modules in these slots are FLARE OE database disk modules. Each database disk module contains an image of the storage-system configuration and current operating status. FLARE OE software ensures that the newly inserted disk module has the correct database information copied to it when it is installed while the storage system is running. If you insert a disk module into one of these slots when the storage system is powered off, the correct FLARE OE database information is *not* written to the replaced database disk module. As a result, storage-system configuration problems may occur when the storage system is powered up or if another database disk module fails. If you install a FLARE OE database disk module and you find that existing virtual disks are not enabled, contact your EMC customer service representative.

Software image disk module replacement

The FLARE software image is stored on disk modules 0 and 2 for the AX100SC and AX100SCi and disk modules 0, 1, 2 and 3 for the AX100 and AX100i. Disk modules 0 and 2 mirror the software for the AX100SC and AX100SCi SP and for the AX100 and AX100i SP A. Disk modules 1 and 3 mirror the software for the AX100 and AX100i SP B. You should never remove and/or replace both disk modules in one of the mirrors at the same time. If you do, no software exists to support that SP, and the SP becomes nonfunctional.

Navisphere Integrator management of non-AX100 CLARiiON storage systems on the same subnet as AX100 series storage systems

If you install an AX100 series storage system on the same network as other CLARiiON storage systems that you manage with Navisphere Integrator, you must upgrade to Navisphere Integrator version 6.16 or higher.

Linux server notes

Admsnap

Admsnap does not support Linux 2.2 kernels.

Snapshot management

The reboot of the Linux server may be slow if deactivated snapshots exist. Activating the snapshots allows the reboot to complete normally.

VMware ESX Server configuration and usage notes

Also see the notes in the “Installation” section.

General limitations

The following configuration limitations and caveats apply regardless of whether Navisphere Express or Navisphere Manager is used to manage an AX100 series storage system.

- ◆ Use of the Navisphere Server Utility **View/Update Server to SP connections** option under a guest OS running in a virtual machine will cause incorrect server information to be displayed in Navisphere. Use this option only under the ESX Server™ Service Console. Access to user data will not be affected.
- ◆ SnapView source virtual disks provided by the AX100 series storage system must be configured on an ESX Server system as raw device mappings (RDMs). Virtual devices that are not used for SnapView™ snapshot operations may reside on VMFS Volumes.
- ◆ VSS is not supported.

Navisphere Express limitations

The following configuration limitations and caveats apply when an AX100 series storage system is *managed* using Navisphere Express.

- ◆ Snapshots cannot be assigned to ESX Server. This is not a restriction for Navisphere Manager.
- ◆ When using RDMs, the source virtual disk can be assigned to only one ESX Server. This is not an issue for Navisphere Manager.

Navisphere Manager limitations

The following configuration limitations and caveats apply when an AX100 series storage system is *managed* using Navisphere Manager.

- ♦ A snapshot disk and the underlying source virtual disk may both be assigned to the same ESX Server system so long as they are not both visible to the same guest OS running on the same ESX Server.

Documentation

The AX100 support website where you accessed these release notes also contains the most up-to-date documents and troubleshooting trees.

The *AX100-Series Documentation* CD (P/N 053-001-240) that shipped with the storage system also contains documents and troubleshooting trees for this product release; however, they are superseded by those on the AX100 support website.

The troubleshooting trees on the AX100 support website are updated frequently.

Documentation updates

This section contains updates to AX100 series documentation.

Online help - AX Navisphere Server Utility

Under the “Viewing or Updating Server to SP Connections” section, replace step 3 with the following:

The utility automatically scans for all connected AX100 series storage systems and lists them under Connected Storage Systems. Under Virtual Disks on External Storage Systems, the utility lists any virtual disks on the storage system that the server has mounted. The information listed in these sections is listed below.

Note: If the Navisphere Server Utility is already running, it will not automatically perform a scan, you must click **Rescan**. If an AX100 series storage system is connected to the server but it was not discovered, a message displays indicating why the system was not discovered. Correct the problem and click **Rescan** to attempt to discover the storage system again.

Connected Storage Systems

HBA/NIC Port - Server's HBA or NIC port ID number.

HBA Port WWN - Server's HBA port world wide name or the iSCSI iqn.

Storage System - Connected storage system name.

SP - SP ID number (SP A or SP B).

Port - SP port ID number.

SP IP - SP IP address.

Virtual Disks on External Storage Systems

Device Name - Physical device name for the virtual disk. This is how the operating system is viewing the virtual disk.

File System - Assigned drive letter(s). Use the assigned drive letter to view the virtual disk.

Virtual Disk - Virtual disk name.

SP IP - SP IP address.

SP - SP that currently owns the virtual disk (SP A or SP B). This is the SP through which data is going to the virtual disk.

Update to AX100-Series Documentation CD (P/N 053-001-240)

If you are viewing the documentation CD on a Solaris server, the pdfs may not open directly from the **index.htm** page. You can either save the pdf when prompted or you can view the pdfs from the **ax100support > pdf** folder.

Update to AX100-Series - *Installing an iSCSI Storage System with a Network Connection to a Windows Server and AX100-Series - Installing an iSCSI Storage System with a Direct Connection to a Windows Server*

Dynamic Disks

Contrary to what the installation guides say, do not upgrade a disk in an iSCSI storage system to a dynamic disk when writing a digital signature to the disk. Dynamic disks are not supported by the Microsoft iSCSI Software Initiator.

NIC initiators

Contrary to what the installation guides say, when configuring your NIC initiators to connect to the iSCSI storage system target, you cannot enable header or data digests when you create an iSCSI login session or discovery session.

A known defect in Microsoft iSCSI Initiator Revisions 1.05 and 1.06 causes the initiator not to re-establish the connection between a server and a storage system when certain iSCSI digest errors occur. This behavior can cause the server to lose access to the storage system. Because of this, EMC does not support the use of iSCSI header or data digests for servers using Microsoft Initiator Revisions 1.05 or 1.06 to target CLARiiON iSCSI storage systems. This defect will be corrected in a future version of the Microsoft Initiator.

iSCSI digests are primarily used to protect against data corruption from misbehaving network devices in layer 3 networks. Users are advised to

use caution when running iSCSI I/O over a problematic layer 3 network without the protection of iSCSI digests. If a CLARiiON iSCSI storage system is deployed in such an environment, it should be configured to support digests, for example, a corrected version of the Microsoft Initiator or the QLogic iSCSI HBA.

Update to PowerPath Release Notes

- ◆ All AX100 series installation, planning, and troubleshooting documents and software are located on the AX100 support website. For information on accessing the site, refer to the support documentation that shipped with your storage system. Refer only to these documents for prescribed installation and troubleshooting tips when using your AX100 series storage system. For an overview of the AX100 with PowerPath, be sure to read *PowerPath in Action: Maintaining Access to Virtual Disks in the AX100* (click **PowerPath** in the “Technical descriptions” section of the AX100 support website).
- ◆ A LUN on other EMC storage systems is known as a virtual disk in an AX100 series storage system.
- ◆ When there are references to accessing Powerlink, ESM, and E-Lab™ Navigator, click **Supported Configurations** in the “Technical descriptions” section of the AX100 support website
- ◆ Issue Tracker is not supported.

Software media, organization, and files

The following table lists the software and documentation media for this product release.

Part number	CD-ROM
053-001-273	<i>AX-Series Server Support CD</i>
053-001-458	<i>EMC PowerPath Version 4.3.2 w4.4 for Linux CD (Fibre Channel only)</i>
053-001-460	<i>EMC PowerPath Version 3.0.5 for Novell NetWare CD (Fibre Channel only)</i>
053-001-340	<i>EMC PowerPath Version 4.4.1 for Windows CD (Fibre Channel and iSCSI)</i>
053-001-396	<i>EMC PowerPath Win iSCSI 1.1 for Windows CD (Additional iSCSI software)</i>
053-001-383	<i>EMC PowerPath Version 4.4 for Solaris CD (Fibre Channel only)</i>
053-001-240	<i>EMC CLARiiON AX100-Series Documentation CD</i>

Installation

The storage-system component (FLARE Operating Environment) of the integrated management software is installed on the storage system at the factory prior to shipment. To install a new version of this software on the storage system, refer to the procedure for upgrading storage-system software on the AX100 support website. For information on accessing this site, refer to the support information that shipped with the storage system. Once on the website, click **Storage-system software** under **Software** in the **Upgrade** section.

You must install the server components of the Integrated Management Software. For information on installing these components, refer to the table below:

Software to install	Software media	Installation instructions
Navisphere Storage System Initialization Utility	AX-Series Server Support CD (P/N 053-001-273)	Getting Started – AX100/AX100SC (P/N 300-001-552) or Installation instructions for your configuration type in the Install section of the AX100 support website or the EMC CLARiiON AX100-Series Documentation CD (P/N 053-001-240)
Navisphere Server Utility		
Admsnap Utility for Linux or NetWare	AX-Series Server Support CD (P/N 053-001-273)	Installing and Using the Utilities on the AX-Series Server Support CD (P/N 053-001-273) Installation instructions for your configuration type in the Install section of the AX100 support website or the EMC CLARiiON AX100-Series Documentation CD (P/N 053-001-240)
PowerPath	EMC PowerPath Version 4.3.2 for Linux CD (P/N 053-001-258) EMC PowerPath Version 3.0.5 for Novell NetWare CD (P/N 053-001-460) EMC PowerPath Version 4.4.1 for Windows CD (P/N 053-001-340) EMC PowerPath Win iSCSI 1.1 for Windows CD (P/N 053-001-396) EMC PowerPath Version 4.4 for Solaris CD (P/N 053-001-383)	Installation instructions for your configuration type in the Install section of the AX100 support website or the EMC CLARiiON AX100-Series Documentation CD (P/N 053-001-240)

VMware ESX Server installation notes

How you install an AX100 series storage system in a configuration with VMware ESX Server software depends on whether you have upgraded from managing the storage system with Navisphere Express to Navisphere Manager.

For a storage system managed with Navisphere Express

Follow the instructions in the VMware ESX Server chapter in the *EMC Installation Roadmap for CX3 Series, CX Series, AX Series, or FC Series Storage Systems* with the following exceptions:

- ◆ Install the Navisphere Initialization Utility and Navisphere Server Utility from the *AX-Series Server Support Products* CD that shipped with the storage system. Follow the instructions for Linux in the *Getting Started - AX100/AX100SC* guide to install and run these utilities on the ESX Server Console OS (COS).
- ◆ Skip the step on installing admhost because SAN Copy/E is not supported for Navisphere Express.
- ◆ Do *not* upgrade the storage system to Navisphere Manager.
- ◆ Skip the step on installing software enablers because they are not needed for Navisphere Express.
- ◆ Use Navisphere Express instead of Navisphere Manager to configure the storage system as follows:
 1. Create a hot spare.
 2. Create one or more disk pools.
 3. Create one or more virtual disks on the disk pools.
 4. Assign one or more disks to the ESX Server.
- ◆ Use Navisphere Express to set up Event Notification in place of setting up Event Monitor with Navisphere Manager.

For a storage system with Navisphere Manager

Follow the instructions in the VMware ESX Server chapter in the *EMC Installation Roadmap for CX3 Series, CX Series, AX Series, or FC Series Storage Systems*.

VMware ESX Server guest OS installation instructions

When installing the Navisphere Server Utility on a Windows guest OS virtual machine, it is important that you answer **No** to the question Do you want information about this server to be updated every time the server starts? Failing to do so can result in misleading server information in Navisphere Express displays.

When installing the Navisphere Server Utility on a Linux guest OS virtual machine you will need to edit the Linux startup file to remove the following entry:

```
"/opt/Navisphere/bin/naviserverutilcli update"
```

Installing the CLARiiON VSS Provider (Navisphere Express only)

The CLARiiON VSS Provider is supported on Windows Server 2003 and VMware ESX Server systems running Windows Server 2003 on the Virtual Machine. However, you can use only the ESX Server system as the production server. You cannot use it as the secondary server, and therefore it cannot access the copy.

If you have Navisphere Manager installed on the AX storage system, refer to the *EMC CX-Series Server Support Products for Windows Installation Guide* (P/N 300-002-038) for information on how to install the VSS Provider. This guide ships on the *CX-Series Server Support CD*.

Installation prerequisites

Before you can install and use the CLARiiON VSS Provider, you must install the Navisphere Server Utility on the same server as the CLARiiON VSS Provider. All servers attached to the AX100 series storage system must have the server utility installed.

To install the CLARiiON VSS Provider

Note: The CLARiiON VSS Provider requires the Navisphere Command Line Interface (CLI). When you install the CLARiiON VSS Provider, the Navisphere CLI will also be installed on the server.

1. Insert the *AX-Series Server Support Products CD* in the CD-ROM drive.
2. From the main menu, select **Install Products on Server**.
3. From the **Install Products** page, select **VSS Provider** and follow the InstallShield wizard instructions.

Unless you specify another folder, the CLARiiON VSS Provider and Navisphere CLI will be installed in the following default locations:

C:\Program Files\EMC\CLARiiON VSS Provider

C:\Program Files\EMC\Navisphere CLI

4. Remove the CD from the CD-ROM drive.
5. Create a file called **ClariionSPAddress** in the same directory where Navisphere CLI was installed, for example, **C:\Program Files\EMC\Navisphere CLI\ClariionSPAddress**.

The **ClariionSPAddress** file should contain the IP addresses of each CLARiiON SP on a separate line. For instance, if you are performing VSS operations on virtual disks contained on two CLARiiON systems and these systems are connected to the server, their IP addresses are listed as follows:

```
Storage System 1 SPA = x.x.x.110
Storage System 1 SPB = x.x.x.111
Storage System 2 SPA = x.x.x.112
Storage System 2 SPB = x.x.x.113
```

Then the contents of the **ClariionSPAddress** file would be:

```
x.x.x.110
x.x.x.111
x.x.x.112
x.x.x.113
```

To remove the CLARiiON VSS Provider

If you want to remove the CLARiiON VSS Provider, select **Settings > Control Panel > Add or Remove Programs > CLARiiON VSS Provider** and click **Remove**.

Silent installations for the Navisphere Initialization and Server Utilities

Silent installations and removals use a command line interface to install or remove the initialization or server utility on all attached Windows servers. To perform the installation or removal, you need to create a response file on one of the attached servers. A response file stores the setup configuration, which allows you to install or remove the utilities on all remaining attached Windows servers by using one command that requires no user input.

Silent installations and removals are supported on Windows Server 2003 and Windows 2000 operating systems only.

Installing the Navisphere Initialization Utility

We recommend that you install the Navisphere Storage System Initialization Utility on at least one server attached to an AX series storage system. It is not required that you install it on every server.

Important We do not recommend that you install Navisphere Storage System Initialization Utility using the command line interface unless you are an advanced user. If you are not, we recommend that you install the utility as described in the installation guide for your configuration.

To perform a silent installation for the initialization utility follow the procedure below.

Preparing for the Installation

1. Log in to the Windows server as Administrator or someone who has administrative privileges.
2. If the initialization utility is already installed, you must remove it by using the Windows **Add/Remove** program. The installation program does not let you overwrite an existing utility.

Important To perform a silent removal, the same version of the utility must be running on each attached Windows server.

3. Insert the *AX-Series Server Support Products* CD in the server's drive.
4. From the CD-ROM directory, navigate to the **windows > AX100_storage_system_initialization** folder.
5. Select the **Install_Navisphere_Initialization_Wizard.exe** file.
6. Click **Next** in the **Navisphere Storage System Initialization Wizard - Welcome** dialog box.

7. Click **Browse** to select the folder where the files should be unpacked; then click **Continue**.

The Navisphere Storage System Initialization Utility **Setup.exe** file and all supporting files are unpacked to the specified folder.

8. Click **Cancel** when the InstallShield wizard opens and click **Yes** to exit the setup.
9. Open a command line window, such as a DOS window.
10. Navigate to the directory where you unpacked the Initialization Utility files (the Initialization Utility **Setup.exe** file and all supporting files). You will run the **Setup.exe** file in the next section.

Creating a response file

1. Create a response file for the initialization utility by issuing the command below. The response file will store the setup configuration so that you can install the initialization utility on all attached Windows servers using one command. Since no input is required, this is referred to as a silent installation.

The command will launch an InstallShield wizard. Pathnames or filenames containing spaces must be in double quotation marks, for example, "C:\my dir\my file.cfg".

Setup.exe -r -f1fullpath\responsefilename

where

-r

Indicates that a response file will be created.

-f1fullpath\responsefilename

Specifies the full pathname and filename of the target response file (in this case the Initialization Utility).

2. If the response file is not already in a shared directory, move it to a shared directory so that all attached Windows servers can access the file.

Performing a silent installation

1. On another attached Windows server (not the same server on which you created the response file), enter one of the commands below to install the initialization utility.

Setup.exe -s -f1fullpath\responsefilename -f2fullpath\logfile

where

-s

Indicates a silent installation. A silent installation requires no input after you enter the command.

-f1fullpath\responsefilename

Specifies the full pathname of the Initialization Utility response file you created.

-f2fullpath\logfile

Specifies the full pathname and filename of the log file. We recommend that you create the log file on a local directory so you do not override a log file from another server's installation.

2. Verify that the installation was successful ("Verifying the silent installation or removal" on page 49) before running the command on all remaining attached Windows servers.
3. If the installation was successful, repeat step 1 on all remaining attached Windows servers.

Removing the Navisphere Initialization Utility

To perform a silent removal of the Navisphere Storage System Initialization Utility, all servers must be running the same revision of the utility. If you have different revisions installed on a Windows server, you cannot perform a silent removal.

Important We do not recommend that you remove the Navisphere Storage System Initialization Utility using the command line interface unless you are an advanced user.

To perform a silent removal for the Initialization Utility follow the procedure below.

Creating a response file

1. Log in to the Windows server as Administrator or someone who has administrative privileges.
2. Run **regedit** and navigate to the following initialization utility registry key:

```
HKEY_LOCAL_MACHINE > SOFTWARE > Microsoft > Windows
> CurrentVersion > Uninstall > {8210BD3A-00C2-11D4-9A6C-
0060B0FB53A4} > UninstallString
```

3. Select and copy the text within the initialization utility **UninstallString**, as listed below.

```
RunDll32
C:\PROGRA~1\COMMON~1\INSTAL~1\engine\6\INTEL3~1\ctor.dll,LaunchSetup "C:\Program Files\InstallShield Installation Information\{8210BD3A-00C2-11D4-9A6C-0060B0FB53A4}\setup.exe"
-STARTEDFROMADDDREMOVEPROGRAMS.
```

4. Open a command line window, such as a DOS window.
5. Create a response file for the initialization utility by issuing the command below. The command consists of the text retrieved from the initialization utility registry and additional switches as shown below.

The command will launch an InstallShield wizard. Pathnames or filenames containing spaces must be in double quotation marks, for example, "C:\my dir\my file.cfg".

```
InitUtilUninstallString -r -f1fullpath\responsefilename
```

where

```
InitUtilUninstallString
```

Is the Initialization utility **UninstallString** text listed in step 3 above.

```
-r
```

Indicates that a response file will be created.

```
-f1fullpath\responsefilename
```

Specifies the full pathname and filename of the response file.

Performing a silent removal

1. On another attached server (not the same server on which you created the response file), open a command line window.
2. Enter the command below to remove the initialization utility.

Important By creating the response file, a removal occurred on the server where the file was created. This is why you do not need to perform this step on that server.

```
InitUtilUninstallString -s -f1fullpath\responsefilename  
-f2fullpath\logfile
```

where

InitUtilUninstallString

Is the initialization utility **UninstallString** text listed in step 3 on page 42.

-s

Indicates a silent removal. A silent removal requires no user input after you enter the command.

-f1fullpath\responsefilename

Specifies the full pathname of the response file created in step 5 on page 42.

-f2fullpath\logfile

Specifies the full pathname and filename of the log file.

Example:

RunDll32

```
C:\PROGRA~1\COMMON~1\INSTAL~1\engine\6\INTEL3  
~1\ctor.dll,LaunchSetup "C:\Program Files\InstallShield  
Installation Information\{8210BD3A-00C2-11D4-9A6C-  
0060B0FB53A4}\setup.exe" -  
STARTEDFROMADDDREMOVEPROGRAMS -s  
-f1E:\aSafeDir\inittoolUninst.iss  
-f2C:\aLocalSafeDir\inittoolUninst.log
```

where **-s** specifies that a silent operation will be performed, in this case a removal, using the response file recorded in **E:\aSafeDir\inittoolUninst.iss**. It will then log the result in **-f2C:\aLocalSafeDir\inittoolUninst.log**.

3. Verify that the removal was successful (refer to “Verifying the silent installation or removal” on page 49) before running the command on all the other attached Windows servers.
4. If the removal was successful, repeat steps 1 and 2 on all remaining attached Windows servers.

Installing the Navisphere Server Utility

We recommend that you install the Navisphere Server Utility on all attached Windows servers.

Important We do not recommend that you install the Navisphere Server Utility using the command line interface unless you are an advanced user. If you are not, we recommend that you install the utility as described in the installation guide for your configuration.

To perform a silent installation for the Server Utility follow the procedure below.

Preparing for the installation

1. Log in to the Windows server as Administrator or someone who has administrative privileges.
2. If the server utility is already installed, you must remove it by using Windows **Add/Remove** program. The installation program does not let you overwrite an existing utility.

Important To perform a silent removal, the same version of the utility must be running on each attached Windows server.

3. Insert the *AX-Series Server Support* CD in the server’s drive.
4. From the CD-ROM directory, navigate to the **windows > AX100_server_utility** folder.
5. Select the **Install_Navisphere_Server_Utility(AX).exe** file.
6. Click **Next** in the **Navisphere Server Utility AX - Welcome** dialog box.
7. Click **Browse** to select the folder where the files should be unpacked; then click **Continue**.

The Navisphere Server Utility **Setup.exe** file and all supporting files are unpacked to the specified folder.

8. Click **Cancel** when the InstallShield wizard opens and click **Yes** to exit the setup.
9. Open a command line window, such as a DOS window.
10. Navigate to the directory where you unpacked the server utility files (the server utility **Setup.exe** file and all supporting files). You will run the **Setup.exe** file in the next section.

Creating a response file

1. Create a response file for the server utility by issuing the command below. The response file will store the setup configuration so that you can install the server utility on all attached Windows servers using one command. Since no input is required, this is referred to as a silent installation.

The command will launch an InstallShield wizard. Pathnames or filenames containing spaces must be in double quotation marks, for example, "C:\my dir\my file.cfg".

Setup.exe -r -f1fullpath\responsefilename

where

-r

Indicates that a response file will be created.

-f1fullpath\responsefilename

Specifies the full pathname and filename of the target response file (in this case the server utility).

2. If the response file is not already in a shared directory, move it to a shared directory so that all attached Windows servers can access the file.

Performing a silent installation

1. On another attached Windows server (not the same server on which you created the response file), enter one of the commands below to install the server utility.

Setup.exe -s -f1fullpath\responsefilename -f2fullpath\logfilename

where

-s

Indicates a silent installation. A silent installation requires no input after you enter the command.

-f1fullpath\responsefilename

Specifies the full pathname of the response file you created in step 1 of the “Creating a Response File” section.

-f2fullpath\logfilename

Specifies the full pathname and filename of the log file. We recommend that you create the log file on a local directory so you do not override a log file from another server’s installation.

2. Verify that the installation was successful (refer to “Verifying the silent installation or removal” on page 49) before running the command on all remaining attached Windows servers.
3. If the installation was successful, repeat step 1 on all remaining attached Windows servers.

Removing the Navisphere Server Utility

To perform a silent removal of the Navisphere Server Utility all servers must be running the same revision of the utility. If you have different revisions installed on a Windows server, you cannot perform a silent removal.

Important We do not recommend that you remove the Navisphere Server Utility using the command line interface unless you are an advanced user.

To perform a silent removal of the server utility follow the procedure below.

Creating a response file

1. Log in to the Windows server as Administrator or someone who has administrative privileges.
2. Run **regedit** and navigate to the following server utility registry key:
HKEY_LOCAL_MACHINE > SOFTWARE > Microsoft > Windows > CurrentVersion > Uninstall > { 9521BD3A-00C2-11D4-9A6C-0060B0FB53A4} > UninstallString
3. Select and copy the text within the server utility **UninstallString**, as listed below.

```
RunDll132
C:\PROGRA~1\COMMON~1\INSTAL~1\engine\6\INTEL3~1\ctor.dll
,LaunchSetup "C:\Program Files\InstallShield
Installation Information\{9521BD3A-00C2-11D4-9A6C-
0060B0FB53A4}\setup.exe" -STARTEDFROMADREMOVEPROGRAMS
```

4. Open a command line window, such as a DOS window.
5. Create a response file for the server utility by issuing the command below. The command consists of the text retrieved from the server utility registry and additional switches as shown below.

The command will launch an InstallShield wizard. Pathname or filenames containing spaces must be in double quotation marks. For example, "**C:\my dir\my file.cfg**".

ServerUtilUninstallString -r -f1fullpath\responsefilename

where

ServerUtilUninstallString

Is the server utility **UninstallString** text listed in step 3 on page 47.

-r

Indicates that a response file will be created.

-f1fullpath\responsefilename

Specifies the full pathname and filename of the response file.

Performing a silent removal

1. On another attached server (not the same server on which you created the response file), open a command line window.
2. Enter the command below to remove the server utility.

Important By creating the response file, a removal occurred on the server where the file was created. This is why you do not need to perform this step on that server.

```
ServerUtilUninstallString -s -f1fullpath\responsefilename -f2fullpath\logfilename
```

where

ServerUtilUninstallString

Is the server utility **UninstallString** text listed in step 3 on page 47.

-s

Indicates a silent removal. A silent removal requires no user input after you enter the command.

-f1fullpath\responsefilename

Specifies the full pathname of the response file created in step 5 on page 47.

-f2fullpath\logfilename

Specifies the full pathname and filename of the log file.

Example:

RunDll32

```
C:\PROGRA~1\COMMON~1\INSTAL~1\engine\6\INTEL3~1\ctor.dll,LaunchSetup "C:\Program Files\InstallShield Installation Information\{ 9521BD3A-00C2-11D4-9A6C-0060B0FB53A4}\setup.exe" -STARTEDFROMADDDREMOVEPROGRAMS -s -f1E:\aSafeDir\serverutilUninst.iss -f2C:\aLocalSafeDir\serverutilUninst.log
```

where **-s** specifies a silent operation will be performed, in this case a removal, using the response file recorded in **E:\aSafeDir\serverutilaxUninst.iss**. It will then log the result in **-f2C:\aLocalSafeDir\serverutilUninst.log**.

3. Verify that the removal was successful (refer to “Verifying the silent installation or removal” below) before running the command on all the other attached Windows servers.
4. If the removal was successful, repeat steps 1 and 2 on all remaining attached Windows servers.

Verifying the silent installation or removal

This section allows you to verify the silent installation or removal of the initialization and server utilities.

1. Check the log files InstallShield creates on each server. You specified the name and location of the log files in step 1 of the installations and step 2 of the removals.
2. In the log file, select **ResponseResult**. If a result code of **0** is displayed, the installation or removal was successful. If the installation or removal was *not* successful, an error displays.

Troubleshooting and getting help

To troubleshoot problems with your AX100SC, AX100SCi, AX100, and AX100i storage system, use the **Troubleshooting Tree** in the **Troubleshoot** section on the AX100 support website or the *AX100-Series Documentation* CD. You must use the **Troubleshooting Tree** before your service provider will send you a replacement part. To launch the **Troubleshooting Tree**, click **interactive help tool** in the **Troubleshoot** section. The AX100 support website also includes a list of authorized service providers.

The information on the website may be more up-to-date than the information on the documentation CD. For information on how to access the AX100 support website, refer to the support information that shipped with the storage system.

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